Due: Thursday, October 16, In class.

1. Exercise 5.B.3
2. Show that for a single output technology, the production set $Y$ is strictly convex if, and only if, $f$ is strictly concave. [Brownie points]
3. Exercise 5.C.1
4. Show that a single output technology with production function $f$ where $f(0) = 0$ satisfies nonincreasing returns to scale if $f$ is concave.
5. Exercise 5.C.9
6. Exercise 5.C.10
7. Exercise 5.C.11
8. For single output technology with production function $f$, show that the average cost is nondecreasing (nonincreasing) in output if $f$ exhibits nonincreasing (nondecreasing) returns to scale. What is the implication in the case of constant returns to scale?
9. Show how the statement of part (ix) of Proposition 5.C.2 modified if $f$ is strictly concave.
10. A firm produces a single output using three inputs. The production function is given by:

$$f(x_1, x_2, x_3) = \min\{x_1, 2x_2\} + \min\{x_2, x_3\}, x_i \geq 0,$$

where $x_i$ is the quantity of input $i$ used in the production process. Solve the cost minimization problem and derive the cost function.
11. Exercise 5.F.1
12. Read Section 5.D and work out Exercise 5.D.2